DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-003096
Date Inspected: 26-Jun-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name: Zhao Chen Sun and Hu Wei Qing

CWI Present:	☑ Yes	☐ No					
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG and SAS Tower Fabrication

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on sub-assembly Bays mentioned below;

Bay 2: 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed square edge machining of 8 -60mm thick x 400mm wide x 1010mm long plates marked P405, P122, and P235, which appear to be stiffener were seen in progress. Drilling of 16-24mm diameter bolt holes on 300mm X 300mm hollow steel diagonal brace still continues. Rolling of one 60mm thick X 405mm wide marked P223, which appears to be a skin plate longitudinal stiffener seen complete. Another one 45mm plate marked A6-1 is getting ready for rolling. There was no Caltrans job at the cutting table and tower mock up 114M was noted idle.

Bay 3: OBG side/bottom/edge panel
This QA observed tack welded stiffener plates to web plate for edge panels EP036-001-033~042, EP034-001-007~016, EP036-001-006~013 and EP032-001-033~042 have insufficient bevel angle(drawing detail WD20H WD20HA requires 45degree) to weld CJP at each end of every stiffener installed as mentioned above. This QA talked and showed to ABF QA Inspector Kevin Dye regarding this incident and said he will asked ZPMC personnel to put more bevel by grinding. See photo below.

Clamping of two 3 open rib stiffener to deck panel DP013-001-002/003 DP012-001-004~007 and DP011-001-002~007 at gantry #1 welding table in preparation for gantry mounted fillet welding was seen in progress; cutting of W21x57 to half to make WT rib stiffeners for various bottom plates BP198 and BP197was on going; drilling of 16-24mm diameter bolt holes on flange of WT(W21x57) for various side panels SP189, SP186 and SP188 continues and tack welding/fit-up of 6-WT(W21x57) rib stiffener to bottom plates BP196-001-007~018 and BP194-001-007~018 all these QA observed.

This QA Inspector observed three ZPMC UT personnel perform UT on SAW welded plate splice butt joints of Side Panel SP302-001-001, SP199-001-001, SP195-001-001, SP192-001-001, SP190-001-001 and SP197-001-001.

The QA Inspector randomly observed ZPMC welder Jiang Jing Teng ID Number 046830, utilizing the SAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2221-B-L2c-S-1, to weld the fill pass on plate butt splice of side panel SP187-001-008. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 509 amps, 29.8 volts with travel speed of 324mm/minute. Weld parameters appeared to comply with contract requirements.

Bay 4: Tower Diaphragm
This QA observed ZPMC MT personnel Wang Wei perform 100% Magnetic Particle Testing on fillet weld between 3-rib stiffener and deck panel DP035-001-001~006 and DP036-001-001~006. It was noted that rust and scale have been removed by ZPMC workers on weld areas prior MT testing. Electromagnetic Yoke was used with alternating current (AC) as power source. The detection media used was dry red ferromagnetic particles and applied with powder blower while the magnetizing force is on and in addition, magnetizing force is applied in perpendicular direction (180 degree apart). This QA also observed ZPMC's conduct of MT on these welds deemed acceptable.

This QA Inspector randomly observed three ZPMC welders Li Shi Qiang welder 053609, Li Meng Qian ID #054460 and Shi Yan Hao ID #053605 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1. 4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly ESD1-SA317 weld joints 9B, 6A and 18BA respectively. The QA Inspector randomly observed ZPMC CWI Zhao Chen Sun monitoring weld parameters. Tack welding/fit-up and pre-assembly of tower diaphragm flange WSD1-SA268 using FCAW 3G was seen in progress and tack welding of run off tab using E7018 electrode on tower diaphragm flange SSD1-SA322 A/B this QA observed.

Bending of heavy plates P1082(N)- 4/8 (B) and P1082(S)- 4/8(K) for diaphragm flanges using oxy-acetylene with thermal heat input of less than 650 degree C with the aid of welded jig and following procedure HSR(T)-122 and HSR(T)-130 respectively this QA noted.

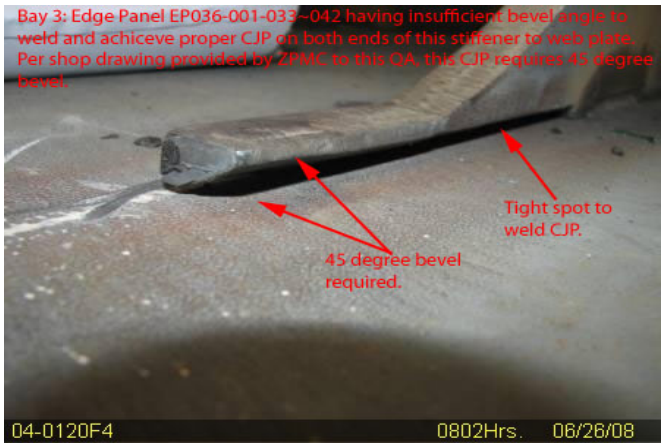
Bay 7: OBG - Floor Beam Sub Assembly
QA Inspector J. Lizardo randomly observed ZPMC qualified welder Hong Shuili ID # 044815 groove welding fill pass on (flange to web plate) tee joint. Mr. Hong was observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class

Supercored 71H, semi automatic at floor beam FB016-010-043. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS).

FCAW fillet welding (2F) was observed on flange to web plate and stiffener to web plate on floor beam sub-assembly FB016-010-004 and FB009-007-022/048 respectively. On fillet weld of floor beam FB016-010 weld 023, elongated with rounded surface porosity was noted. ZPMC/QC and CWI were aware of this and working/adjusting the welding machine to avoid its recurrence (see photo below). ZPMC welder working on these was identified as Wang Hong Lei ID# 066687. ZPMC CWI Hu Wei Qing was noted monitoring the welding and its parameters. SMAW tack welding/fit-up was also noted on stiffener to web plate of floor beam FB015-008-013/014 using 4.0mm diameter, TL-508 electrode. Weld repair due to undersize fillet weld on stiffener to web plate of floor beam FB003-046 weld joints 083, 084, 091, 092, 099 and 100 was also noted. ZPMC welder Hu Yacheng was observed doing the task and was using TL-508 electrode.

Bay 8: Tower Diaphragm
This QA Inspector randomly observed two ZPMC welder Xie Chunfu ID number 045236 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly WSD1-SA309 -6B. The QA Inspector randomly observed ZPMC CWI Lvliqing monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 212 amps, 25.8 volts with travel speed of 112mm/minute. Weld parameters appeared to comply with contract requirements.

The QA Inspector randomly observed ZPMC welder Wang Caili ID Number 045203, utilizing the FCAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2231-TC-U42-F-1, to weld plate splice butt joint of 2 unequal thickness(12mm to 30mm) on Floor Beam Sub-Assembly FB081-001-032. The QA Inspector randomly observed ZPMC CWI Lvliqing monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 276 amps, 28.3 volts. The weld parameters appeared to comply with contract requirements. Tack weld/fit-up of plate splice butt joint of 2 unequal thickness (12mm to 16mm) using TL-508 on floor beams FB059-007-001 and FB059-007-006 was also noted.



WELDING INSPECTION REPORT

(Continued Page 4 of 4)

Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer